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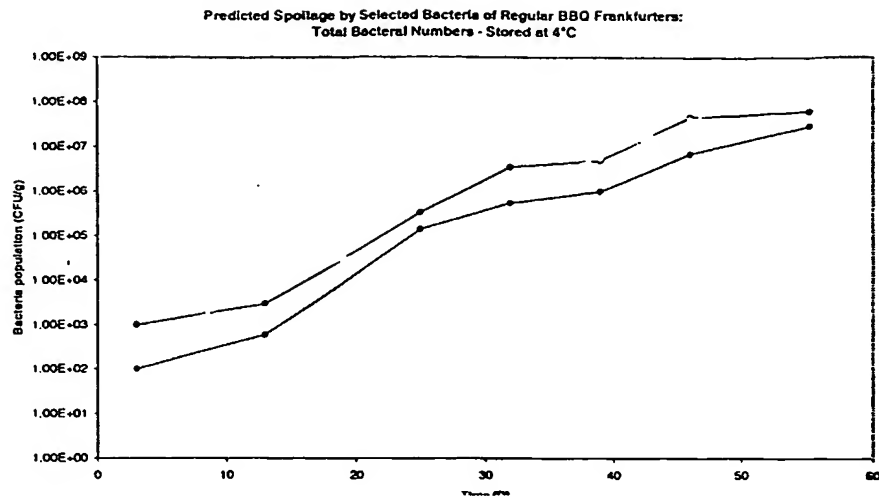


Fig. 1.1. Total bacterial numbers of frankfurters at various times during storage following inoculation with *Camobacterium piscicola* NCIMB 702852 or *Leuconostoc gelidum* UAL187.

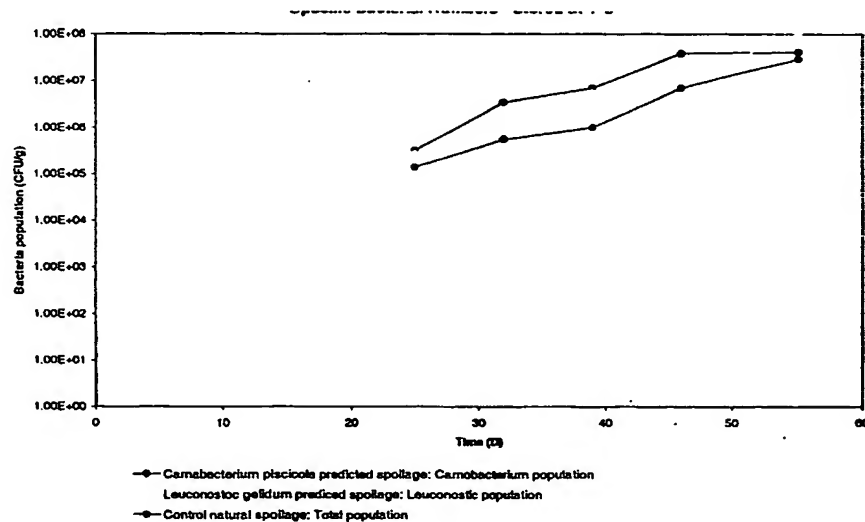


Fig. 1.2. Specific bacterial numbers of frankfurters at various times during storage following inoculation with *Camobacterium piscicola* NCIMB 702852 or *Leuconostoc gelidum* UAL187.

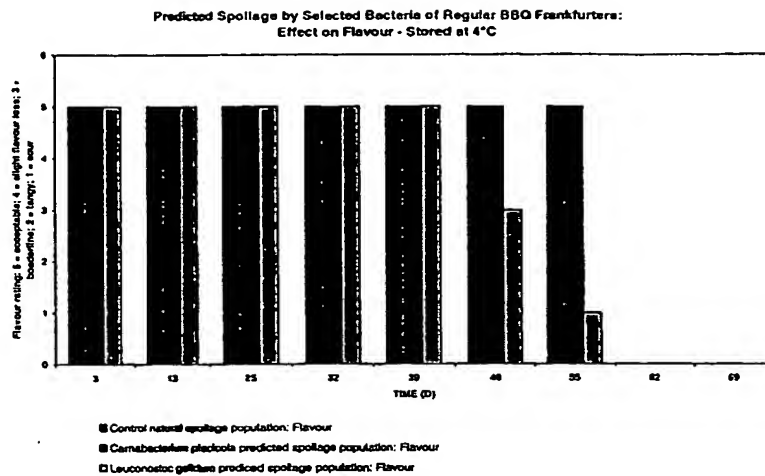
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Fig. 1.3. Sensory evaluation of frankfurters at various times during storage following inoculation with *Carnobacterium piscicola* NCIMB 702852 or *Leuconostoc gelidum* UAL187.

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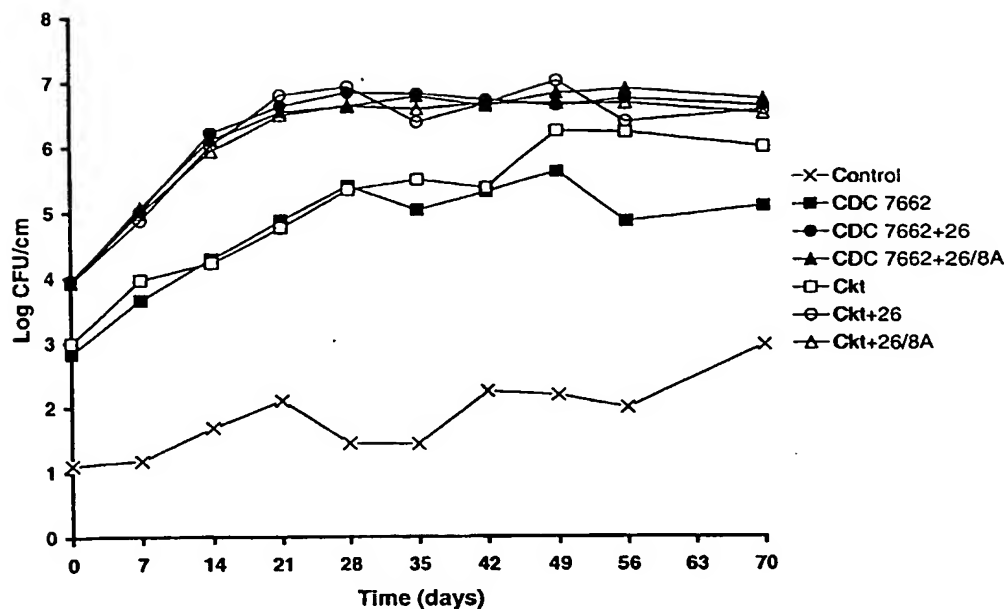


Fig. 2.1. Total bacterial population on frankfurters at various times during storage following inoculation with *Carnobacterium piscicola* UAL26 and UAL26/8A and co-inoculation with either *Listeria monocytogenes* CDC 7662 or a bio-compatible cocktail (Ckt) of *Listeria monocytogenes* (List 4, HPB65, HPB642).

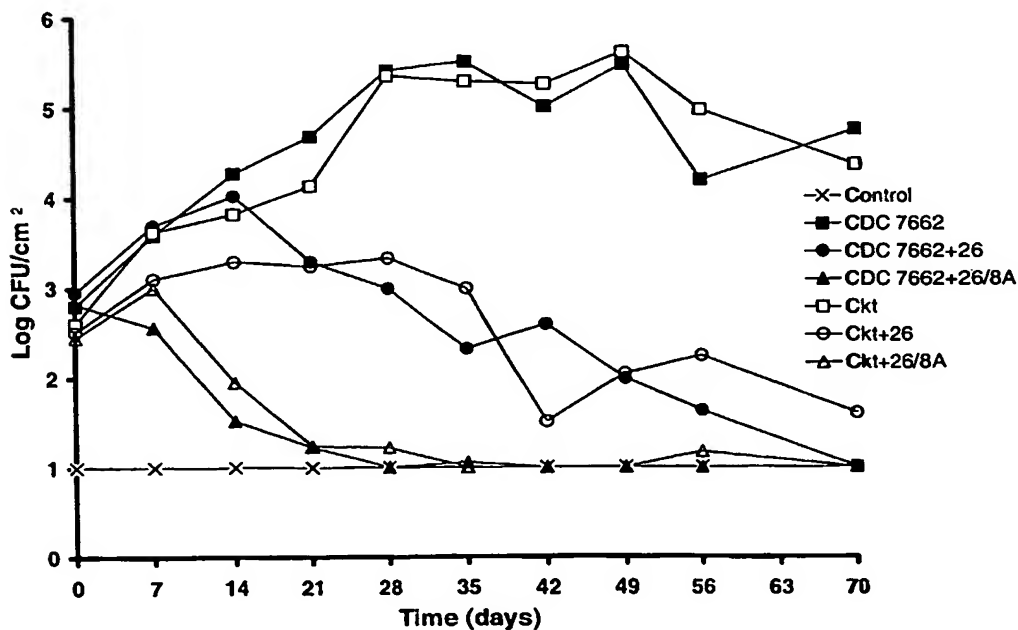


Fig. 2.2. Growth of *Listeria monocytogenes* on frankfurters at various times during storage following inoculation with *Carnobacterium piscicola* UAL26 and UAL26/8A and co-inoculation with either *Listeria monocytogenes* CDC 7662 or a bio-compatible cocktail (Ckt) of *Listeria monocytogenes* (List 4, HPB65, HPB642).

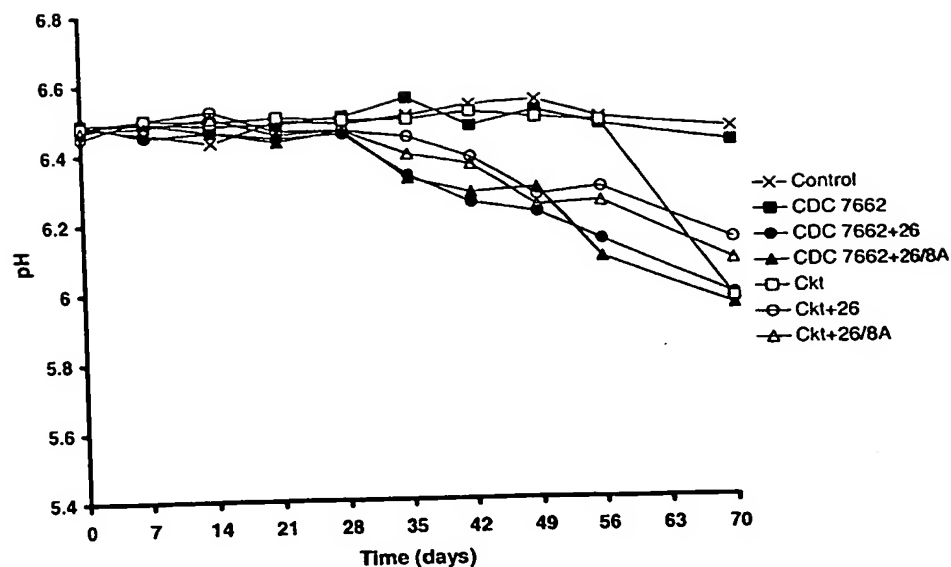


Fig. 2.3. Surface pH of frankfurters at various times during storage following inoculation with *Carnobacterium piscicola* UAL26 and UAL26/8A and co-inoculation with either *Listeria monocytogenes* CDC 7662 or a bio-compatible cocktail (Ckt) of *Listeria monocytogenes* (List 4, HPB65, HPB642).

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Fig. 3A

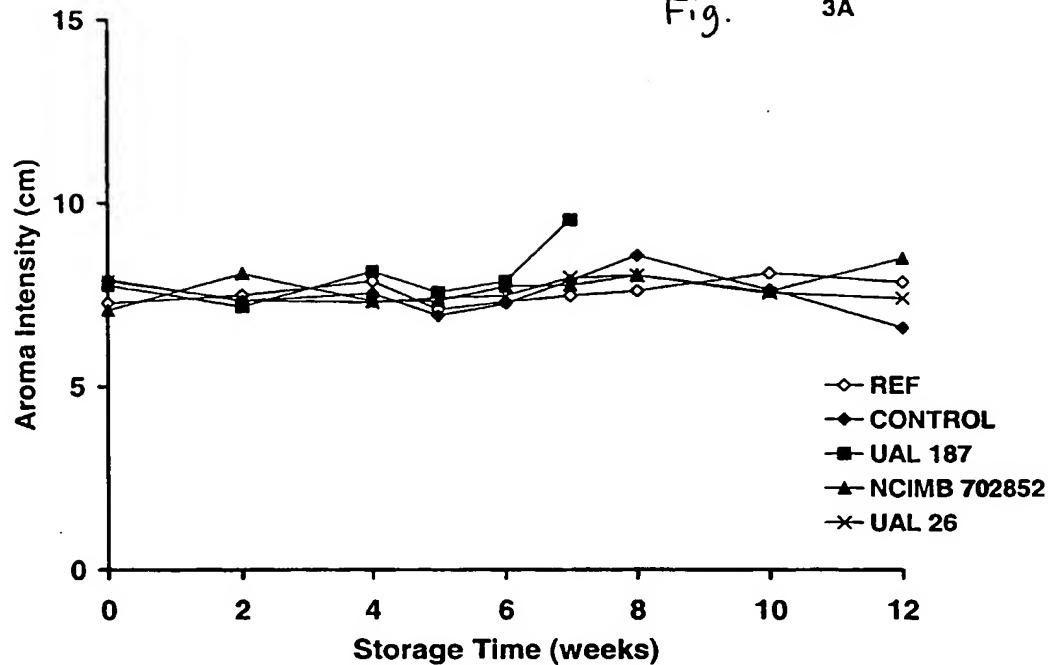
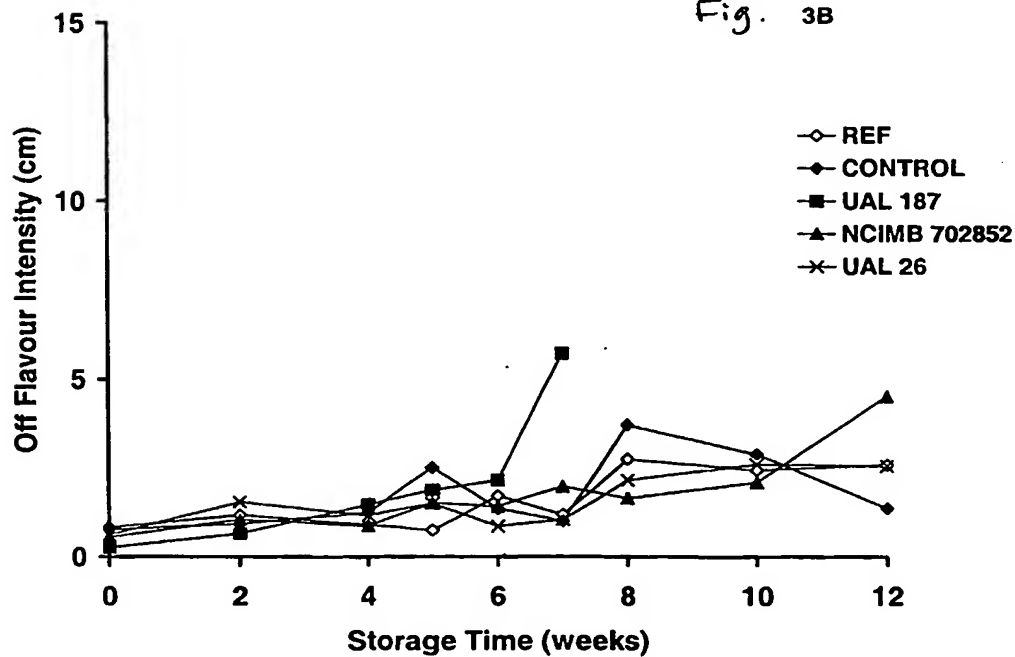


Fig. 3B



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 3C

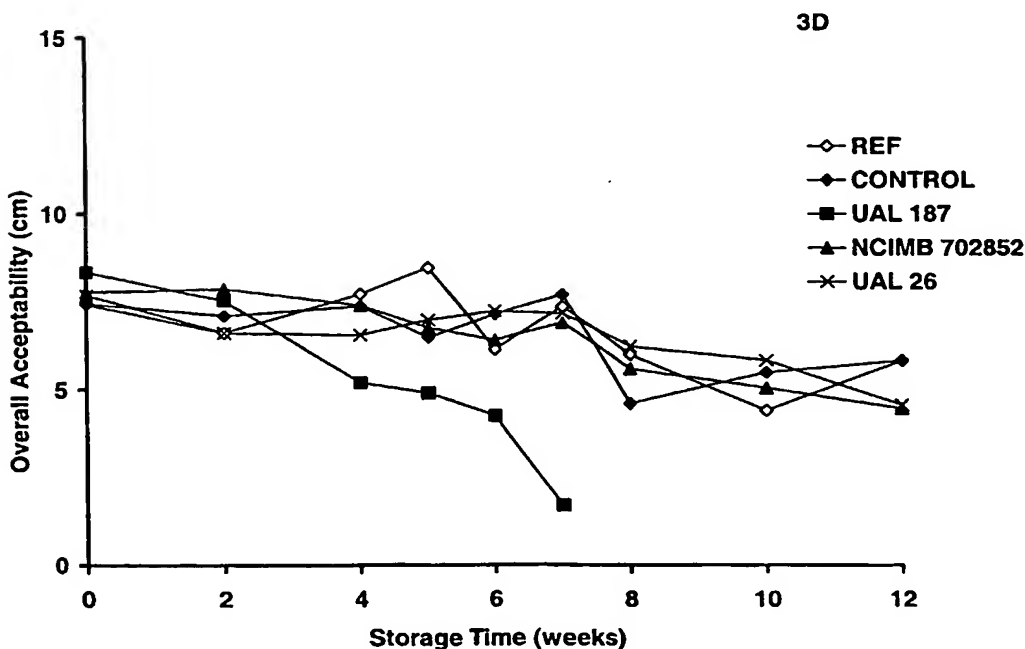
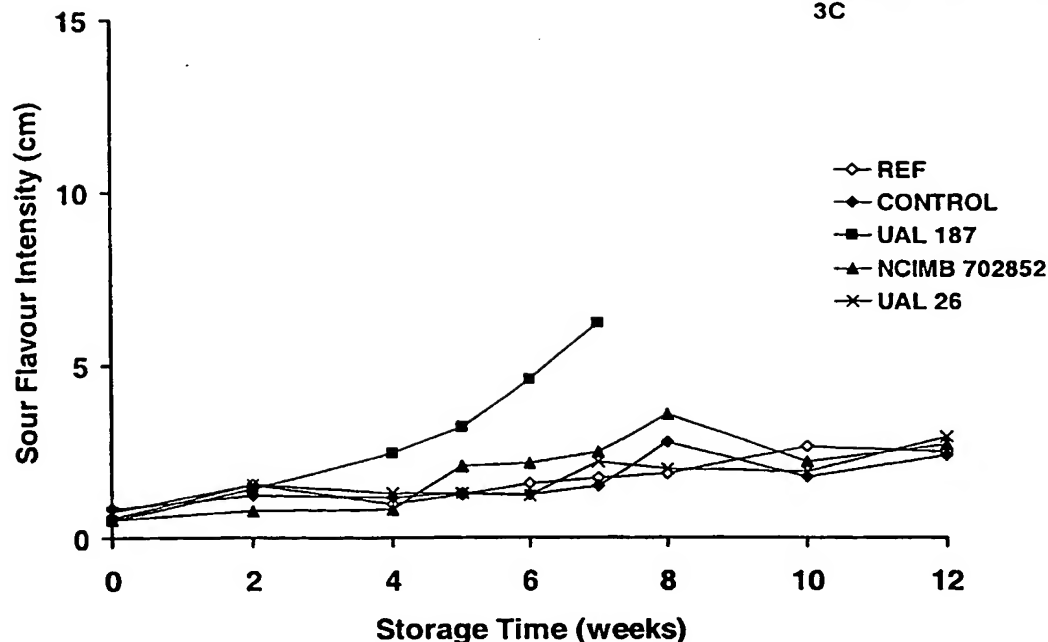


Fig. 3. Sensory analysis of frankfurters at various times during storage at 4°C following inoculation with *Leuconostoc gelidum* UAL187 or *Carnobacterium piscicola* strains NCIMB 702852 and UAL26. At weekly intervals samples were removed and subjected to evaluation for overall aroma intensity (3A), off-flavour (3B), sourness/acidity (3C), and overall acceptability (3D) by 9 trained panelists. Results were scored using a 15 cm unstructured line scale where 0 is bland or none and 15 is extreme or very strong. Control samples were dipped in sterile 0.85% saline and stored at 4°C with treated samples and hidden reference sample (REF) were frankfurters that had not been subjected to any dipping treatment and were stored at -30°C.